

IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended): A rinse solution nozzle assembly for dispensing a rinse solution on a substrate, comprising:

a first nozzle array including at least one nozzle, having a central axis disposed over a center of the substrate, and configured to dispense said rinse solution substantially near the center of said substrate;

a first control valve coupled to said first nozzle array and configured to actuate a first flow rate of said rinse solution through said first nozzle array;

a second nozzle array including a plurality of nozzles and configured to dispense said rinse solution across a radial span of said substrate on a side of the substrate facing the first nozzle array;

a second control valve coupled to said second nozzle array and configured to actuate a second flow rate of said rinse solution through said second nozzle array; and

a ~~cross-connect~~ fluid supply line supplying the rinse fluid both to the first control valve and to the second control valve.

2. (Original): The rinse solution nozzle assembly as recited in claim 1, further comprising:

a controller coupled to said first control valve and said second control valve, configured to control said first flow rate through said first nozzle array, and configured to control said second flow rate through said second nozzle array.

3. (Currently Amended): The rinse solution nozzle assembly as recited in claim 1, further comprising:

a rinse solution supply system coupled to the ~~cross-connect~~ fluid supply line.

4. (Original): The rinse solution nozzle assembly as recited in claim 3, wherein said rinse solution supply system comprises at least one of a fluid supply valve, a filter, a flow measurement device, and a flow control device.

Claims 5-6 (Canceled).

7. (Original): The rinse solution nozzle assembly as recited in claim 1, wherein said substrate is rotated during dispensing of said rinse solution.

8. (Original): The rinse solution nozzle assembly as recited in claim 1, wherein said rinse solution comprises de-ionized water.

9. (Original): The rinse solution nozzle assembly as recited in claim 2, wherein said controller is further configured to open said first control valve for a first period of time permitting a flow of the rinse solution through said first nozzle array.

10. (Original): The rinse solution nozzle assembly as recited in claim 9, wherein said controller is further configured to open said second control valve for a second period of time permitting a flow of the rinse solution through said first nozzle array and said second nozzle array following said first period of time.

11. (Currently Amended): A cleaning system for providing a rinse solution on a substrate, comprising:

a cleaning chamber;

a substrate holder coupled to said cleaning chamber and configured to support said substrate;

a drive unit coupled to said substrate holder and configured to rotate said substrate holder;

a rinse solution nozzle assembly coupled to said cleaning chamber and configured to dispense said rinse solution in said cleaning chamber;

said rinse solution nozzle assembly including,

a first nozzle array having at least one nozzle, having a central axis disposed over a center of the substrate, and configured to dispense said rinse solution substantially near the center of said substrate,

a first control valve coupled to said first nozzle array and configured to actuate a first flow rate of said rinse solution through said first nozzle array,

a second nozzle array including a plurality of nozzles and configured to dispense said rinse solution across a radial span of said substrate on a side of the substrate facing the first nozzle array,

a second control valve coupled to said second nozzle array and configured to actuate a second flow rate of said rinse solution through said second nozzle array, and

a ~~cross-connect~~ fluid supply line supplying the rinse fluid both to the first control valve and to the second control valve; and

a controller coupled to said first control valve and said second control valve of said rinse solution nozzle assembly, configured to control said first flow rate through said first nozzle array, and configured to control said second flow rate through said second nozzle array.

12. (Original): The cleaning system as recited in claim 11, wherein said controller is coupled to said drive unit and configured to control at least one of a rotation rate and a rotation rate acceleration of said drive unit.

13. (Withdrawn): A method for dispensing a rinse solution on a substrate, comprising:
rotating said substrate;

dispensing said rinse solution from a first nozzle array on said substrate for a first period of time, said rinse solution being dispensed substantially near a center of said substrate;

following said first period of time, dispensing said rinse solution from said first nozzle array and a second nozzle array on said substrate for a second period of time, said rinse solution being dispensed across a radial span of said substrate;

terminating said dispensing of said rinse solution from said first nozzle array and said second nozzle array on said substrate; and

terminating said rotating of said substrate.

14. (Withdrawn): The method as recited in claim 13, wherein said dispensing said rinse solution from a first nozzle array dispenses said rinse solution from at least one nozzle.

15. (Withdrawn): The method as recited in claim 13, wherein said dispensing said rinse solution from a second nozzle array dispenses said rinse solution from a plurality of nozzles.

16. (Withdrawn): The method as recited in claim 13, wherein said dispensing said rinse solution from a first nozzle array dispenses said rinse solution from an outlet end of a first control valve, and

wherein said dispensing said rinse solution from a second nozzle array dispenses said rinse solution from an outlet end of a second control valve.

17. (Withdrawn): The method as recited in claim 16, wherein said dispensing said rinse solution from a first nozzle array and said dispensing said rinse solution from a second nozzle array comprise controlling a first flow rate through said first nozzle array and a second flow rate through said second nozzle array.

18. (Withdrawn): The method as recited in claim 16, wherein said dispensing said rinse solution from a first nozzle array supplies said rinse solution through a first inlet end of said first control valve coupled to a rinse solution supply system, and

wherein said dispensing said rinse solution from a second nozzle array supplies said rinse solution through a second inlet end of said second control valve coupled to said rinse solution supply system.

19. (Withdrawn): The method as recited in claim 18, wherein said dispensing said rinse solution from a first nozzle array and said dispensing said rinse solution from a second

nozzle array dispenses said rinse solution from at least one of a fluid supply valve, a filter, a flow measurement device, and a flow control device.

20. (Withdrawn): The method as recited in claim 16, wherein said dispensing said rinse solution from a first nozzle array supplies said rinse solution through a first inlet end of said first control valve coupled to a first rinse solution supply system, and

wherein said dispensing said rinse solution from a second nozzle array supplies said rinse solution through a second inlet end of said second control valve coupled to a second rinse solution supply system.

21. (Withdrawn): The method as recited in claim 20, wherein said dispensing said rinse solution from a first nozzle array dispenses said first rinse solution from at least one of a fluid supply valve, a filter, a flow measurement device, and a flow control device, and

wherein said dispensing said rinse solution from a second nozzle array dispenses said second rinse solution from at least one of a fluid supply valve, a filter, a flow measurement device.

22. (Withdrawn): The method as recited in claim 16, wherein said dispensing said rinse solution from a first nozzle array comprises opening said first control valve for said first period of time.

23. (Withdrawn): The method as recited in claim 16, wherein said dispensing said rinse solution from a first nozzle array and said dispensing said rinse solution from a second nozzle array comprises opening said first control valve and said second control valve for said second period of time.

24. (Withdrawn): The method as recited in claim 13, wherein said dispensing said rinse solution from a first nozzle array and said dispensing said rinse solution from a second nozzle array dispenses de-ionized water.

25. (Withdrawn): The rinse solution nozzle assembly, wherein the first nozzle array is configured to dispense a first rinse solution and the second nozzle array is configured to dispense a second and different rinse solution.

26. (Currently Amended): A system for providing a rinse solution on a substrate, comprising:

means for supporting the substrate in a chamber;

means for rotating the substrate;

means for dispensing a rinse solution on a central axis disposed over a center of said substrate in a first step to neutralize the surface of the substrate and a second step to provide hydraulic pressure from said rinse solution substantially along the entire surface of the substrate on a same side of the substrate as in the first step, and

said means for dispensing including a ~~cross-connect~~ fluid supply line supplying the rinse fluid both separately to the center of the substrate and along the entire surface of the substrate.

27. (Withdrawn): A computer readable medium containing program instructions for execution on a processor, which when executed by the processor cause a substrate cleaning system to perform the following steps:

rotating said substrate;

dispensing said rinse solution from a first nozzle array on said substrate for a first period of time, said rinse solution being dispensed substantially near a center of said substrate;

following said first period of time, dispensing said rinse solution from said first nozzle array and a second nozzle array on said substrate for a second period of time, said rinse solution being dispensed across a radial span of said substrate;

terminating said dispensing of said rinse solution from said first nozzle array and said second nozzle array on said substrate; and

Application No. 10/673,254

Reply to Office Action of August 14, 2006

terminating said rotating of said substrate.